REQUEST FOR QUOTATIONS *(THIS IS NOT AN ORDER)*	THIS RFQ [X] IS [ ] IS NOT A SMALL BUSINESS SET-ASIDE	PAGE 1 OF PAGES 11

1. REQUEST NO.	2. DATE ISSUED	3. REQUISITION/PURCHASE REQUEST NO.	4. CERT. FOR NAT. DEF. UNDER BDSA REG. 2 AND/OR DMS REG. 1	RATING
N00167-07-Q-5000	16-Oct-2006	62648026		DO-C9

5a. ISSUED BY
NAVAL SURFACE WARFARE CENTER, CARDEROCK
CODE 3323, PATRICIA PERZELLA
9500 MACARTHUR BLVD
WEST BETHESDA MD 20817-5700

6. DELIVER BY *(Date)*
SEE SCHEDULE

7. DELIVERY
[X] FOB DESTINATION [ ] OTHER *(See Schedule)*

5b. FOR INFORMATION CALL: *(Name and Telephone no.) (No collect calls)*
PATRICIA PERZELLA 301-227-5994

8. TO: NAME AND ADDRESS, INCLUDING ZIP CODE

9. DESTINATION *(Consignee and address, including ZIP Code)*
SEE SCHEDULE

10. PLEASE FURNISH QUOTATIONS TO THE ISSUING OFFICE IN BLOCK 5a ON OR BEFORE CLOSE OF BUSINESS:
(Date) 30-Oct-2006

IMPORTANT: This is a request for information, and quotations furnished are not offers. If you are unable to quote, please so indicate on this form and return it to the address in Block 5a. This request does not commit the Government to pay any costs incurred in the preparation of the submission of this quotation or to contract for supplies or services. Supplies are of domestic origin unless otherwise indicated by quoter. Any representations and/or certifications attached to this Request for Quotations must be completed by the quoter.

11. SCHEDULE *(Include applicable Federal, State, and local taxes)*

ITEM NO. (a)	SUPPLIES/ SERVICES (b)	QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
	SEE SCHEDULE				

12. DISCOUNT FOR PROMPT PAYMENT	a. 10 CALENDAR DAYS %	b. 20 CALENDAR DAYS %	c. 30 CALENDAR DAYS %	d. CALENDAR DAYS *No.* %

NOTE: Additional provisions and representations [ ] are [ ] are not attached.

13. NAME AND ADDRESS OF QUOTER *(Street, City, County, State, and ZIP Code)*	14. SIGNATURE OF PERSON AUTHORIZED TO SIGN QUOTATION	15. DATE OF QUOTATION
	16. NAME AND TITLE OF SIGNER *(Type or print)*	TELEPHONE NO. *(Include area code)*

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		18	Months		

TECHNICAL SUPPORT AND SERVICES
FFP
MAGNETOSTRICTIVE MATERIALS RESEARCH AND DEVELOPMENT
EXPERTISE PER THE ATTACHED STATEMENT OF WORK.
FOB: Destination
DWG NR: N/A
PURCHASE REQUEST NUMBER: 62648026

NET AMT

Section C - Descriptions and Specifications

STATEMENT OF WORK

1. TITLE

1.1 Scientific and technical support for NSWCCD, West Bethesda, Advanced Materials Branch (617).

2. OBJECTIVE/BACKGROUND

2.1 Provide physics and material science expertise to support the development of magnetostrictive materials (Fe-based magnetostrictive alloys, Terfenol-D) from basic research and material development through applications, taking into account the various and unique Navy requirements for the entire breadth of Navy needs from underwater transducers and sensors to shipboard vibration control and energy harvesting. Transducers and actuators ranging in size from nanoscale through large, high power projectors will be addressed. Performance over a wide range of temperature and shock loads as required by Naval systems and well beyond those experienced in the commercial sector, must be addressed and analyzed to assure both near and far-term performance. Specific tasking will be defined in writing, including description of effort, schedule, and deliverables, based on this base SOW.

3. SCOPE OF WORK

The contractor must be a PhD physicist with demonstrated extensive knowledge of and experience in the magnetic and magnetoelastic properties, e.g. magnetostriction, permeability, piezomagnetic constant, elastic moduli, and magnetic anisotropy of magnetostrictive materials. Specific and significant experience (more than 25 years) must be demonstrated in the 6.1 development of Navy and DoD-specific magnetostrictive materials such as Terfenol-D, Galfenol and high magnetoelastic coupling coefficient sensor materials and must have demonstrated the ability to formulate theoretical models for magnetostrictive materials. Experience aggregating more than 25 years is required with the following specific alloy systems: magnetostrictive RFe_2 and Fe-Ga alloy systems, where R is one or more rare earths for the temperature range of -60ºC to 80ºC; alloy design, e.g. proper choice of the rare earth components for the RFe_2 alloys and proper choice of Ga and X (Mn, V, Al, Co, etc.) for the Fe-Ga-X alloys to achieve desired transduction performance; high magnetoelastic coupling coefficient sensor materials. Also required is extensive knowledge of the use of these materials in Navy devices, e.g. vibration dampers, low frequency and piezomagnetic/piezoelectric hybrid transducers, and magnetic field sensors. The contractor shall provide technical services to 617 for typical tasks that include:

3.1 Sonar Transducer Materials Development

3.1.1 High-Strength Alloys with Moderate Magnetostriction Development - Current alloys with giant magnetostriction are quite brittle and expensive A need exists to develop less expensive, stronger alloys with magnetostrictions ~ 200 ppm. Alloys will be based upon bcc Fe with primary additions of Ga, Al, and Co, and minor additions of Mo, C, B and N. Structures investigated will be B2 (CsCl), $D0_3$ (BiF_3) and $L1_2$ ($AuCu_3$). The effect of the dependence of the concentration of Ga, Al, and Co on the magnetization, magnetic anisotropy, and magnetostriction will be examined over a broad temperature range from cryogenic temperatures to above room temperature.

3.1.1.1 The effect of the dependence of the concentration of Ga in Fe-Ga alloys on the magnetization, magnetic anisotropy, and magnetostriction will be examined in detail. Emphasis will be on the “double” peak nature of the magnetostriction.

3.1.1.2 Annealing of Fe-Ga alloys under compression and/or magnetic field - Annealing of Galfenol (Fe-Ga) alloys in the range of 19% Ga has shown that an internal anisotropy energy can be developed. This allows for transducer operation of these alloys under tension up to 7 ksi. This important feature will be examined extensively. Annealing would be accomplished

under both compression, tension and magnetic fields. Of great importance is the possibility to achieve near perfect magnetomechanical transduction ($k \cong 1$) under tensile operation when the product of the tensile load and the saturation magnetostriction equals the built-in anisotropy.

3.1.1.3 Elastic property measurements as a function of magnetic field and temperature on single crystal binary and ternary Fe-Ga alloys to be determined.

3.1.1.4 Dynamic performance of Galfenol alloys under tensile loads - The transduction properties of stress-annealed Galfenol under tension will be examined at low frequencies (10 Hz – 100 Hz) to extend the results obtained with the previous pseudo-static measurements.

3.1.1.4.1 Strain output, power output and frequency dependence will be determined for various Ga compositions and annealing conditions. The issues of eddy currents and magnetic circuits will be investigated.

3.2 Theoretical Investigation of Magnetoelasticity

3.2.1 Investigation into the physical origin of the magnetoelastic fundamentals leading to the large magnetostriction of the Fe based alloys will be made, including analysis of elastic properties data and saturation magnetostrictions.

3.3 Energy Harvesting

3.3.1 Magnetomechanical alloys can be utilized to take unwanted vibration energy and converting into useful electrical energy. It is important to discern and evaluate the feasibility of converting unwanted mechanical energy (or noise) into useful electrical power using Galfenol and Terfenol transduction devices.

3.4 Magnetic Materials Development for Naval Sensor Applications

3.4.1 Develop transducer materials to sustain and enhance fluxgate magnetometer performance by using new and optimized amorphous and crystalline alloys in sensors. Measure magnetic material characteristics which are correlated with sensor performance in order to guide material alloy and annealing process investigations to obtain a stable, low noise sensor.

4. GFI

4.1 All applicable technical data including drawings, technical manuals, appropriate and relevant supporting documentation, and sources of scientific information shall be made available by 617 or the West Bethesda technical library.

5. GFE

5.1 The contractor shall be required to work at the government facility located in West Bethesda, MD or at the contractor's facility as requested by the government representative in charge of the project.

5.2 The government shall provide workspace and necessary resources to the contractor if available.

5.3 The contractor may be required to provide computer equipment for contractor personnel.

5.4 The contractor may be required to purchase incidental supplies, not to exceed 20% of total contract value.

5.5 The contractor is required to support facilities and equipments with specialized expertise, not to interfere with routine maintenance, but to assure optimum performance for the specific tasking required by this statement of work, as follows:

5.5.1 Calibration, modification, and operation of existing:

5.5.1.1 Magnetic materials characterization systems, including:

5.5.1.1.1. Vibrating sample magnetometer

5.5.1.1.2. High magnetic field electromagnet

5.5.1.1.3. Load frames with magnetoelastic measurement capabilities

5.5.1.2 Network/spectrum analyzers

5.5.1.3 Environmental Chambers

5.5.1.4 Furnaces

5.5.1.5 Power Supplies

6. PERFORMANCE AND DELIVERY

6.1 All technical support shall be completed NLT 18 months from date of award.

6.2 The contractor shall provide copies of technical information and/or electronic copies of all initiatives as requested by the project technical lead. This includes, but is not exclusive to:

6.2.1 Scientific Reports

6.2.2 Facilities and Equipment modification Documentation

6.2.3 Support on Proposals

6.3 The contractor will provide presentations to peer groups and sponsors as required and relevant to tasking specified, and the format specified, including, but not exclusive to:

6.3.1. PowerPoint

6.3.2. MS Office

6.4 The contractor will coordinate efforts and exchange information with other contractors and government professionals as required and relevant to tasking specified.

7. CONFERENCES AND MEETINGS

7.1 The contractor shall be available for frequent (average 3 – 5 times per week) meetings to be held at NSWCCD, West Bethesda, MD or other location as identified by the technical leader.

7.2 The contractor shall possess the requisite clearance to attend meetings at the SECRET level.

8. TRAVEL

8.1 Local and/or long distance travel may be required to meet project objectives. The technical lead will alert the contractor when and where travel is required.

9. **SECURITY REQUIREMENTS**

9.1. Personnel with classified clearance at the SECRET level are required.

10. TECHNICAL POINT OF CONTACT – TO BE ARRANGED

11. SERVICES INFORMATION

11.1 The contractor shall not exercise personal judgment on behalf of the Government. The Government shall not assign sub-tasks or prepare work schedules but shall allow the contractor to meet delivery schedules established in the overall task or project. The technical lead shall monitor work via contractor reports as requested.

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	N/A	N/A	N/A	Government

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
0001	18 mths. ADC	18	N/A FOB: Destination	

Section G - Contract Administration Data

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.204-2	Security Requirements	AUG 1996
52.245-2	Government Property (Fixed Price Contracts)	MAY 2004
52.249-8	Default (Fixed-Price Supply & Service)	APR 1984
252.227-7013	Rights in Technical Data--Noncommercial Items	NOV 1995
252.232-7007	Limitation Of Government's Obligation	MAY 2006

CLAUSES INCORPORATED BY FULL TEXT

Your quotation must include the following information:

Price list number and date

or

Cost breakdown by direct labor (list categories, hours and pay rates). In addition to the direct rates, provide the applicable indirect information (G&A), overhead, facilities capital cost of money (FCCM) and profit.

or

Applicable General Services Administration (GSA) contract number.

If unable to quote FOB, Destination, please complete the following:

FOB Point _____

Estimated Shipping Charge _____

Business size:

Large _____ Small _____ Nonprofit _____

Cage Code _____

Tax Identification Number (TIN) _____

DUNS _____

ELIGIBILITY REQUIREMENTS

All contractors and individuals doing business with the Federal Government must be registered at the Contractor Central Registration Database located at: http://www.ccr.gov/

ELECTRONIC DISTRIBUTION OF CONTRACT DOCUMENTS

(a) The DoD Electronic Document Access (EDA) provides World Wide Web access to documents used to support the procurement, contract administration, bill paying, and accounting processes. EDA is being used by the Naval Surface Warfare Center, Carderock Division to electronically distribute all contract award and contract modification documents, including task and delivery orders. The contractor will be sent a notification email when a contractual document has been uploaded for distribution. The contractor will be required to register as a vendor on the EDA web site (http://eda.ogden.disa.mil) in order to view/download their company's contractual documents. The files posted are in .pdf format and may be accessed using Adobe Acrobat Reader. Adobe Acrobat Reader is a free software that may be downloaded at http://www.adobe.com/products/acrobat/readstep.html.

(b) Offerors must provide the following information that will be used to make electronic distribution for any resultant contract.

Name of Point of Contact_____

Phone Number for Point of Contact _____

E-mail Address for Receipt of Electronic Distribution _____

USE OF THE GOVERNMENT-WIDE COMMERCIAL PURCHASE CARD

Will you accept the Government-wide Commercial Purchase Card as a method of purchasing supplies and/or services.

_____Yes _____ No

Will you accept the Government wide Commercial Purchase Card as a method of payment for your invoice.

_____Yes _____ No

DUTY FREE ENTRY

Will any materials being shipped to the Government require a duty-free entry certificate for foreign supplies.

_____Yes _____ No

If yes, please include dollar amount $_____

Note: The following provision 52.204-8 applies to this solicitation only when the solicitation includes the clause 52.213-4, Terms and Conditions—Simplified Acquisitions (Other Than Commercial Items)

52.204-8 Annual Representations and Certifications (Jan 2006)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is _____[insert NAISC code].

(2) The small business size standard is _____ [insert size standard].

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (c) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (c) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

[ ] (i) Paragraph (c) applies.

[ ] (ii) Paragraph (c) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(b) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause #	Title	Date	Change
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of provision)